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Anatomic Pathology
Clinical Pathology
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May 30, 2011

Re: Anthony Davidson

I have reviewed materials supplied to me regarding the death and the circumstances surrounding the death of Anthony Davidson. These materials include the Second Amended Complaint, Autopsy Report, Toxicology Report, documents which were produced (including the medical records from the Iredell Memorial Hospital); answers to interrogatories relating to David Wayne Lowery, Marc Anthony Cuddy Carmona, William Howard Goforth, City of Statesville, other produced documents, William Howard Goforth's deposition, supplemental answers to interrogatories for the above individuals and entities, and the SBI Report regarding the incident and the death.

A brief synopsis of the events surrounding Mr. Davidson's death is as follows; this is not meant to be a comprehensive delineation of all events and occurrences contained within the records, however: On July 26, 2008, Anthony DeWayne Davidson, a 29 year old African American male, was in a grocery store with his wife. His wife had expressed that he was suffering delusions and needed help. He left the store without paying for a gift card, and the police were called, who found him in a nearby restaurant. He was arrested, and taken to the jail. During these events, he was making delusional religious statements, including stating that he was the "Son of God." His hands were handcuffed behind his back during this time. A struggle was reported to have begun, at which time Mr. Davidson was shot with a Taser dart cartridge, whereupon he fell. He got up, and was shot by two other officers simultaneously, and the Taser was activated repeatedly. Then, he was shocked with the Taser in the "drive stun" mode, which means that the probes of the weapon were placed directly in contact with his body and the electrical current discharged. He sustained a total of at least 10 Taser shocks, from four individuals. He was placed within a restraint chair, and hooded; reports document that Mr. Davidson struggled during this process. After being restrained, it was determined that Mr. Davidson should be "checked out" at the hospital, and a nurse notified the hospital that he was being transported there. Mr. Davidson was placed in the back seat of a patrol car, lying across the seat. His body had to be manually lifted and placed there by the officers.

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Upon arrival at the hospital, Mr. Davidson was minimally responsive; the initial assessment at 1645 hours describes him as "silent; decreased/LOC", with decreased breath sounds, bradycardia, a blood pressure of 66/47 mmHg, a pulse of 59/min, and an oxygen saturation of 92%. His condition rapidly deteriorated; at a time which is most probably 1655 hours (but mistimed in the ER records as "1755"), the spit mask was removed, and Mr. Davidson was not breathing. Reassessment at 1700 hours disclosed that he was unresponsive with no pulse, and cardiopulmonary resuscitation was initiated. His cardiac rhythm was pulseless electrical activity, and the first blood gas that was drawn at 1758 hours revealed an extremely profound metabolic acidosis, with a blood pH of 6.609, pO₂ 483 mmHg, pCO₂ 87.1 mmHg, HCO₃ 5 mmol/L, and base excess -25.5 mmol/L. His cardiac rhythm was restored, but he remained unconscious and in shock, requiring pressor agents to maintain his blood pressure. The severe shock initiated the development of respiratory dysfunction, liver and kidney failure, rhabdomyolysis, disorders of coagulation, and he died the next day. Of note, the CPK value in the Emergency Department was 377 U/L, which is mild elevation, but does not constitute rhabdomyolysis.

An autopsy was performed, which revealed injuries on the chest, thigh and back which corresponded to the points of Taser dart and "drive stun" application. The heart was mildly enlarged at 470 grams, without hypertrophy of the chambers. Microscopically, there was no cardiac fibrosis; one section revealed foci of contraction band necrosis, and necrotic myocytes were found in a papillary muscle section. Other organ sections showed evidence of the shock that Mr. Davidson had manifested following his cardiorespiratory arrest.

Extensive toxicology studies were performed, both on antemortem (specimens collected during life) and postmortem specimens. Blood specimens were entirely negative for any drugs and alcohol. An antemortem urine sample contained benzoylecgonine ("BZG," an inactive cocaine metabolite) at >0.40 mg/L, cocaethylene at <0.020 mg/L, and cocaine at 0.045 mg/L. These findings indicate that Mr. Davidson had consumed cocaine and alcoholic beverages within several days of his arrest and hospitalization, but that he was not actively "under the influence" of cocaine or alcohol at the time of this arrest, as none of these substances were found in his blood in these analyses. Also, as BZG has a much longer blood elimination half-life than that of parent cocaine, the fact that no BZG was found within antemortem blood samples further substantiates that he had no cocaine or cocaine metabolites in his blood at the time of his arrest.

The Syndrome of Excited Delirium describes of sequence of combined factors and events that may culminate in death. This syndrome is generally recognized currently to include acute onset of symptoms, delirium (a myriad of speech and behavioral manifestations with inconsistent thought processes, hallucinations, and other

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observations), combative and/or violent behavior, use of physical restraint, *sudden cardiac death within minutes to hours after development of symptoms*, lack of response to CPR, and a history of stimulant abuse or endogenous mental disease. Deaths that result from the Syndrome of Excited Delirium are thought to occur from a primary hyperadrenergic state, wherein continued physical stress causes activation of the sympathetic nervous system with release of adrenaline and noradrenaline, causing an increase in the heart rate, accompanied by a physiologic decrease in the blood potassium. It is recognized that the presence of stimulant drugs (such as cocaine and amphetamine) will accentuate the hyperadrenergic state, resulting in further stress on the heart and biochemical derangements. Also, any elements of physical stress, such as restraint by others or struggling, serve to further cause activation of the sympathetic nervous system and accentuate the hyperadrenergic state. This also includes the application of electrical control devices such as the Taser; although the Taser (and other similar devices) do not cause intrinsic damage to the body and the electric current does not produce either immediate or lasting physical effects, nonetheless the Taser and similar devices produces pain, and pain activates the sympathetic nervous system and further causes secretion of adrenaline and noradrenaline in to the blood, even further elevating the hyperadrenergic state. Ultimately, if the hyperadrenergic state is sufficiently prolonged and severe, systemic failure begins to develop; this is often observed by the "sudden collapse" of an individual during arrest and restraint, through the rapid development of a lethal cardiac rhythm disturbance which cannot be reversed.

In the case of Mr. Davidson, there was no parent cocaine within his blood at the time of this arrest and the events leading to his hospitalization. He did not abruptly collapse, but once he was finally restrained and placed within the restraint chair and hooded, he began to gradually develop cardiovascular failure, which was detected at the hospital as hypotension, bradycardia (slow heart rate), culminating in cardiorespiratory arrest. The metabolic consequences of the severe hyperadrenergic state and reduced systemic perfusion are reflected in the very severe systemic metabolic acidosis that was found in the first blood gas analysis; this severe acidosis was biochemical consequence of the extreme stress that he had been experiencing during the sequence of events at the jail. Given the findings at the hospital and his continued deterioration, and the fact that repeated stress causes further clinical deterioration through persistent hyperadrenergic stimulation, the repeated applications of the Taser must be included in the factors which caused and exacerbated the hyperadrenergic stimulation in the first place. Unlike many individuals who develop the Syndrome of Excited Delirium, Mr. Davidson did not collapse and suddenly die while being restrained, but in contrast, developed progressive systemic metabolic acidosis consequent to a persistent hyperadrenergic state that was initiated and perpetuated by the physical and mental stress of his arrest, struggles with officers, multiple applications of the Taser, and his eventual restraint. In this regard, the seriousness of the repeated (at least 10) Taser applications is very significant; each

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application produces pain, further perpetuating the cycle of adrenal gland stimulant chemical output, elevated heart rate, physiologic biochemical derangement, and deterioration which characterizes the hyperadrenergic state. Within the educational materials produced by Taser International that is included within the Responses for Request of Production of Documents of the materials included for my review, Slides 44 and 45 (Bates stamped page 00417) specifically state, "It is advisable to minimize the number of ECD applications by working quickly to restrain the subject," and "This may be especially true when dealing with persons in a health crisis such as excited delirium. It is advisable to minimize the physical and psychological stress to the subject."

In summary, it is my opinion, to a reasonable degree of medical certainty, that Anthony Davidson died as the consequences of profound systemic acidosis which culminated in cardiorespiratory failure, unremitting shock and eventual multiorgan system failure, which was precipitated by a hyperadrenergic state that was accelerated, exacerbated and compounded by psychological stress, physical stress during the course of altercations and struggles with law enforcement officers, and the repeated application of an electronic control device, which was applied to his body at least ten times. The gradual development of his physiologically catastrophic condition is supportive of the cumulative effects of these stressors on Mr. Davidson, and his appearance and behavior both prior to and during transport to the hospital, and at the hospital, reveal the progression of a hyperadrenergic state that is evolving to the point of cardiorespiratory shutdown. The absence of cocaine and cocaine metabolites in his blood eliminate this drug as being a direct contributor to his death. To a reasonable degree of medical certainty, if Anthony Davidson had been directly transported to the hospital for medical evaluation following his arrest, and also if he had not sustained the repeated applications of the Taser ECD device that individually and cumulatively served to exacerbate his hyperadrenergic state, Mr. Davidson would have survived, more probably than not.

All of the above opinions are rendered to a reasonable degree of medical certainty.

A current copy of my Curriculum Vitae is attached, as is a record of my deposition and courtroom testimony over the preceding four years. I charge \$500/hour for the review of materials and consulting in matters, \$750/hour for deposition testimony (with a 2 hour minimum), and \$5000/day plus applicable travel and lodging expenses for live courtroom testimony.



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